



Armed Forces College of Medicine AFCM



Arm & Cubital Fossa

Dr. Shereen Adel

Ass. Prof. of Anatomy & Embryology

INTENDED LEARNING OBJECTIVES (ILO)



By the end of this lecture the student will be able to:

1. Describe the attachment, action and nerve supply of muscles of the front and back of arm ; coracobrachialis, biceps, brachialis and triceps.
2. Describe root value, course, main relations and branches of musculocutaneous, ulnar, median and radial nerves in arm.
3. Define beginning, termination, course and main branches of brachial artery

Key Points

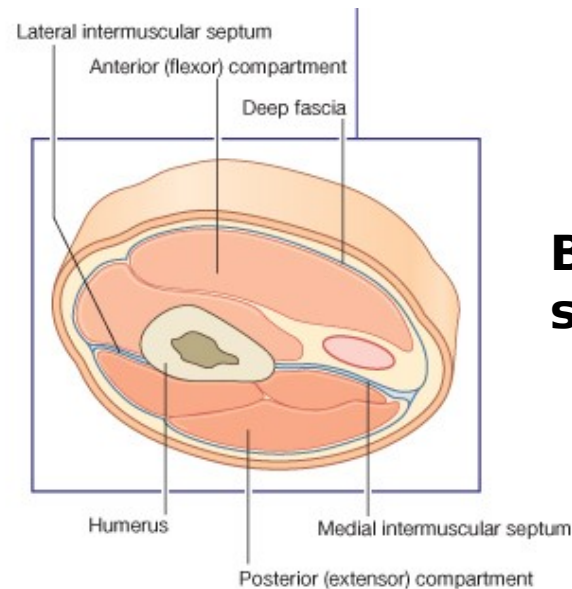


- 1- Muscles & nerves of front of arm.
- 2- Brachial artery
- 3- Cubital fossa.
- 4- Muscles & nerves of back of arm.

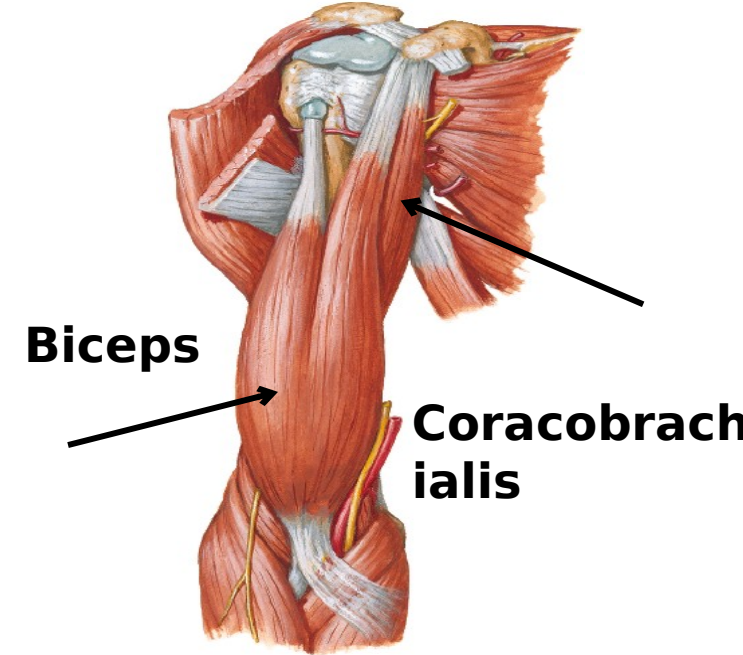
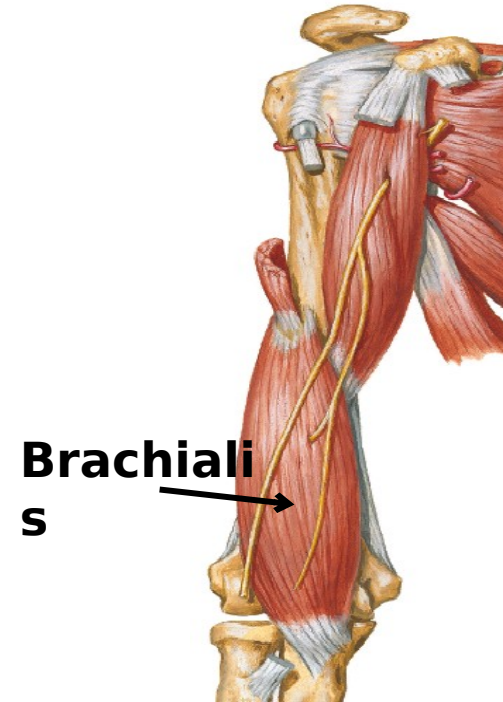
Muscles of Front of Arm



- Arm is divided into anterior & posterior compartments by medial & lateral inter-muscular septum & humeri



© Elsevier. Drake et al: Gray's Anatomy for Students - www.studentconsult.com



Frank H. Netter. 4th edition

- Muscles of anterior compartment are

biceps , coracobrachialis & Musculoskeletal & integumentary module

Muscles of Front of Arm



1-Biceps brachii

Origin :

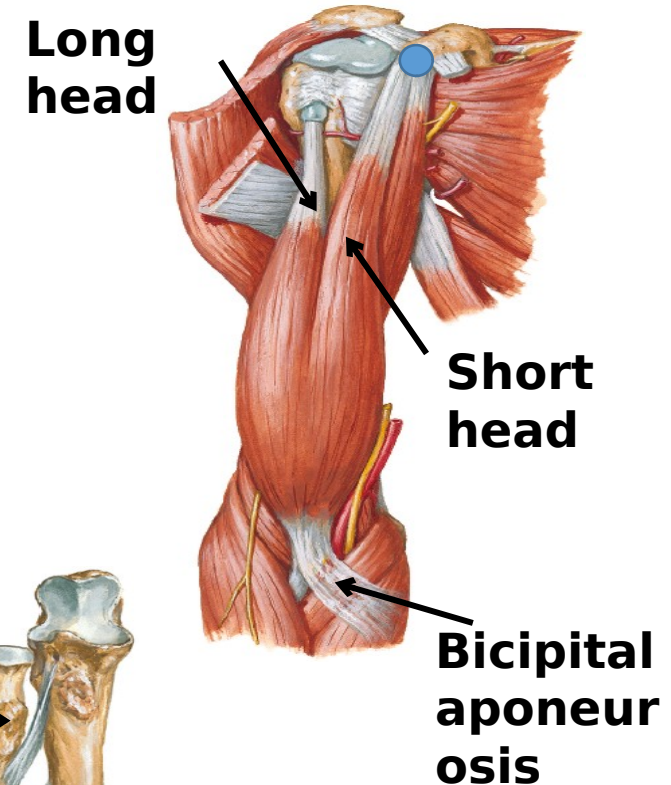
Short head : tip of coracoid process

Long head : from supra-glenoid tubercle (within shoulder joint capsule)

Insertion : posterior part of radial tuberosity & by extension called bicipital aponeurosis



Radial tuberosity



Muscles of Front of Arm



Origin

2-Coracobrachialis

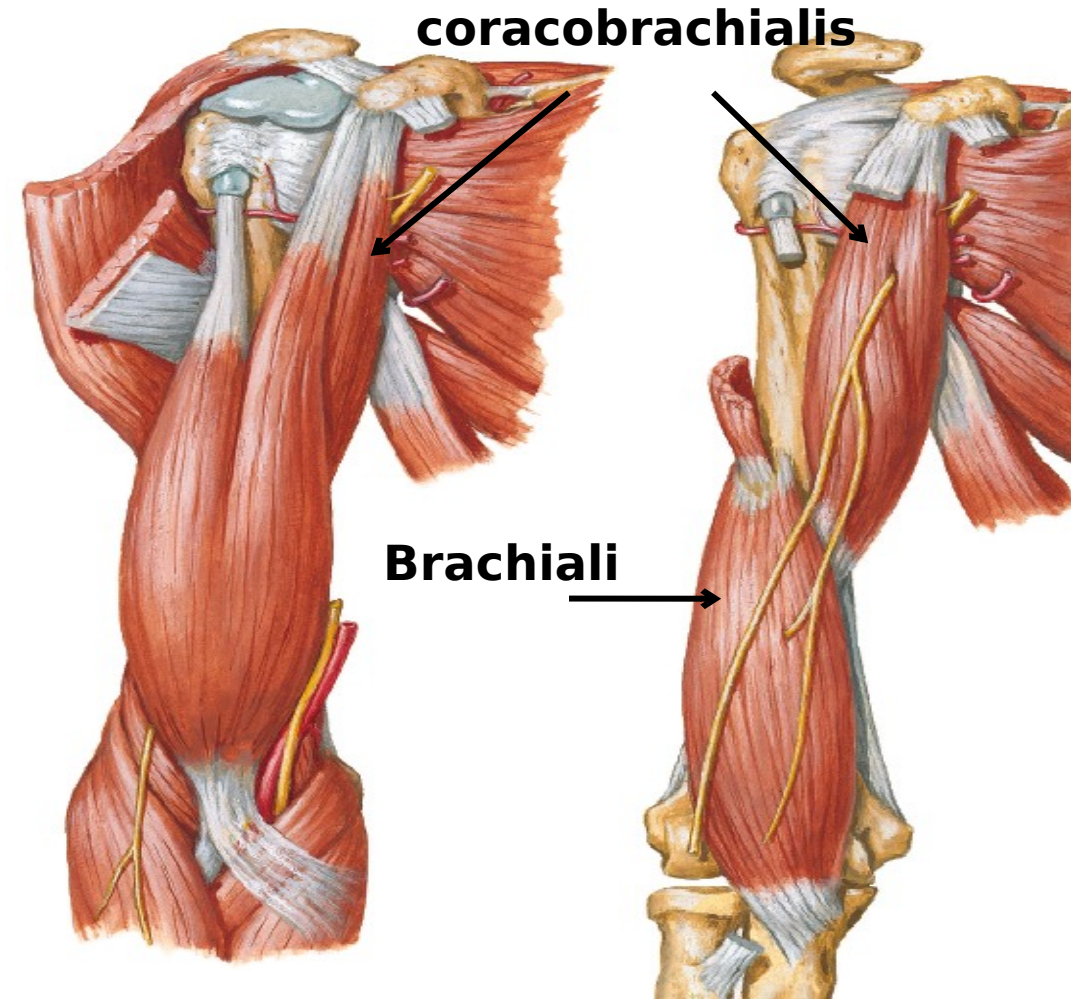
Tip of coracoid process

3-Brachialis

lower half of front of humerus & septa

Insertion

- Middle of medial border of humerus
- Front of coronoid process of ulna



Frank H. Netter. 4th edition

Nerve supply and Action

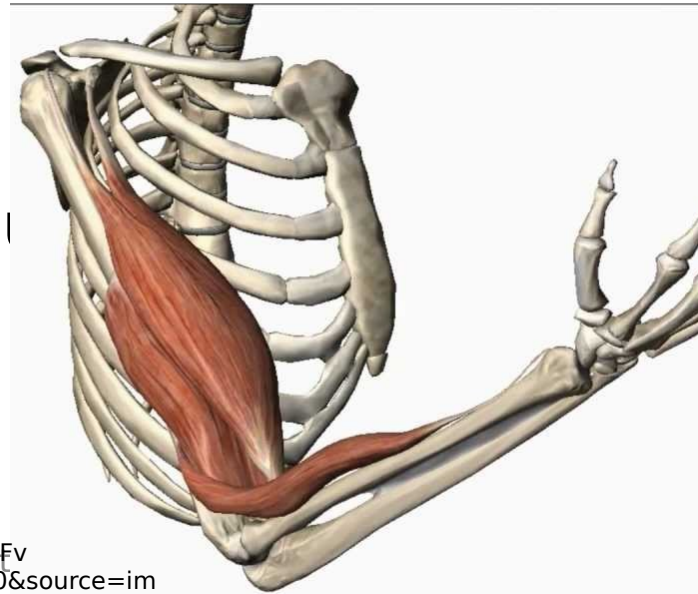


All muscles of front of arm are supplied by:

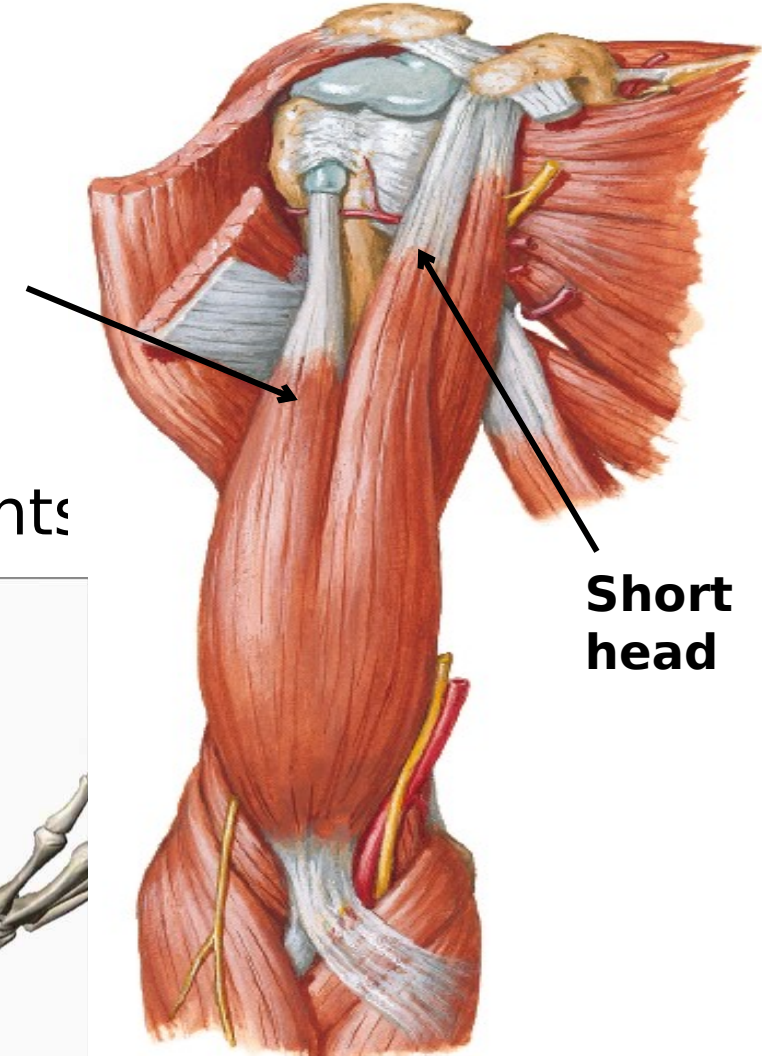
Musculo-cutaneous nerve + radial nerve for lateral fibers of brachialis

- **Action of biceps brachii :**

- 1- Powerful **supinator** in rapid or resisted movements
- 2- **Flexion** of elbow
- 3- Short head flexes arm
- 4- Long head supports head of h



Long head



Short head

Frank H. Netter. 4th edition

Nerve supply and Action

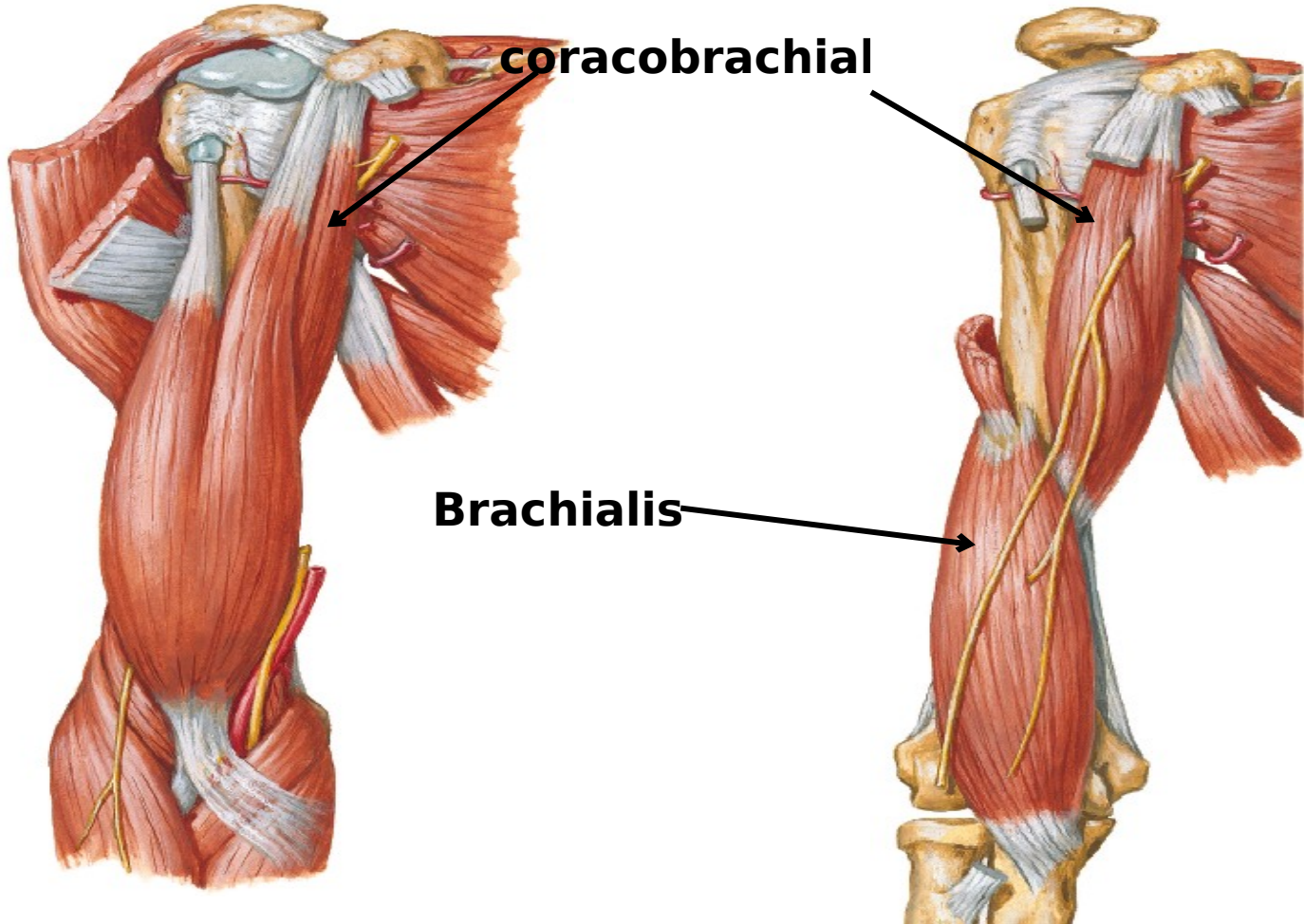


Action of coracobrachialis:

- flexion & adduction of arm

Action of brachialis:

- Principal flexor of elbow



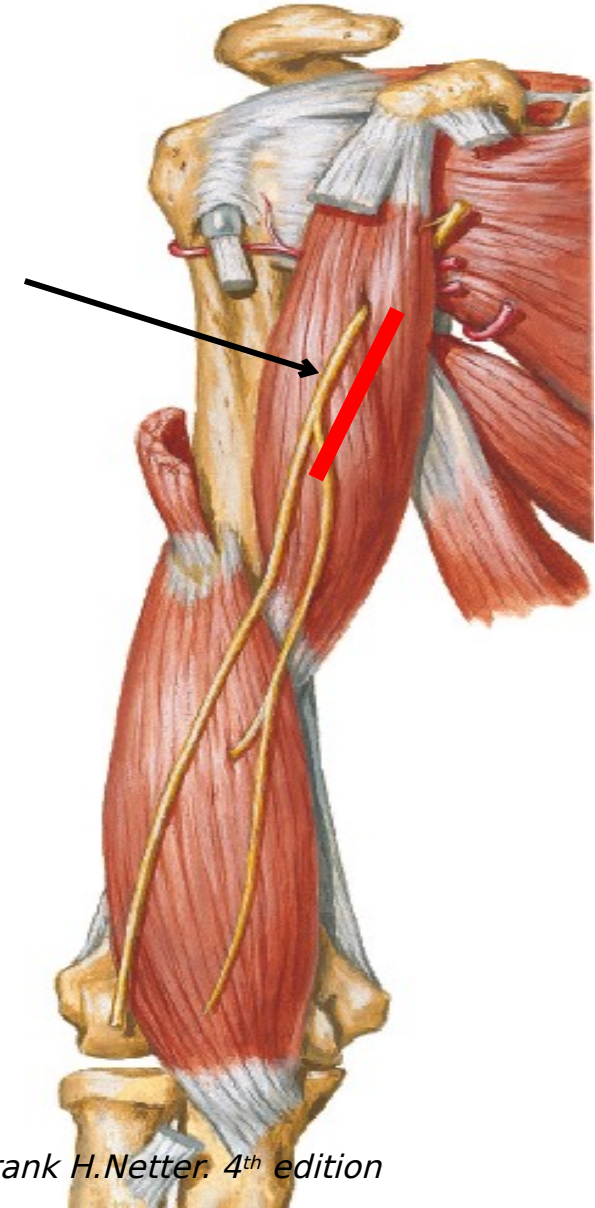
Frank H. Netter. 4th edition

Nerves of Front of Arm



Musculocutaneous

- **Root value:** ventral rami of C5,6, 7
- a branch of the lateral cord of brachial plexus.
- It lies lateral to third part of axillary artery
- Pierces **coracobrachialis**.
- Passes between **biceps** & **brachialis** on lateral side of arm
- Pierces deep fascia & continues as **lateral cutaneous nerve of forearm**



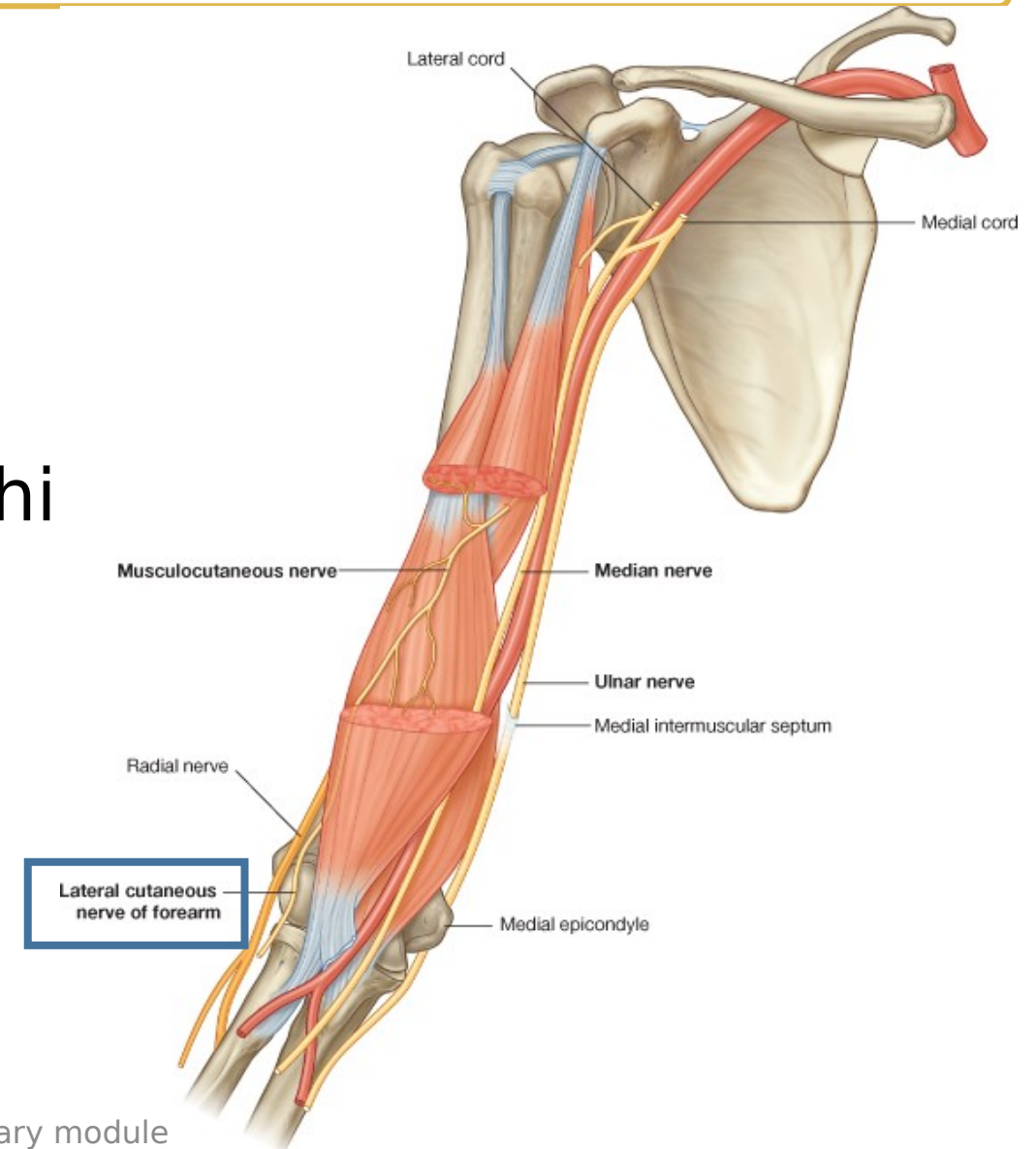
Nerves of Front of Arm



Branches of Musculo-Cutaneous
Muscular to muscles of front of arm

Articular to elbow : from nerve to brachi

lateral cutaneous nerve of forearm



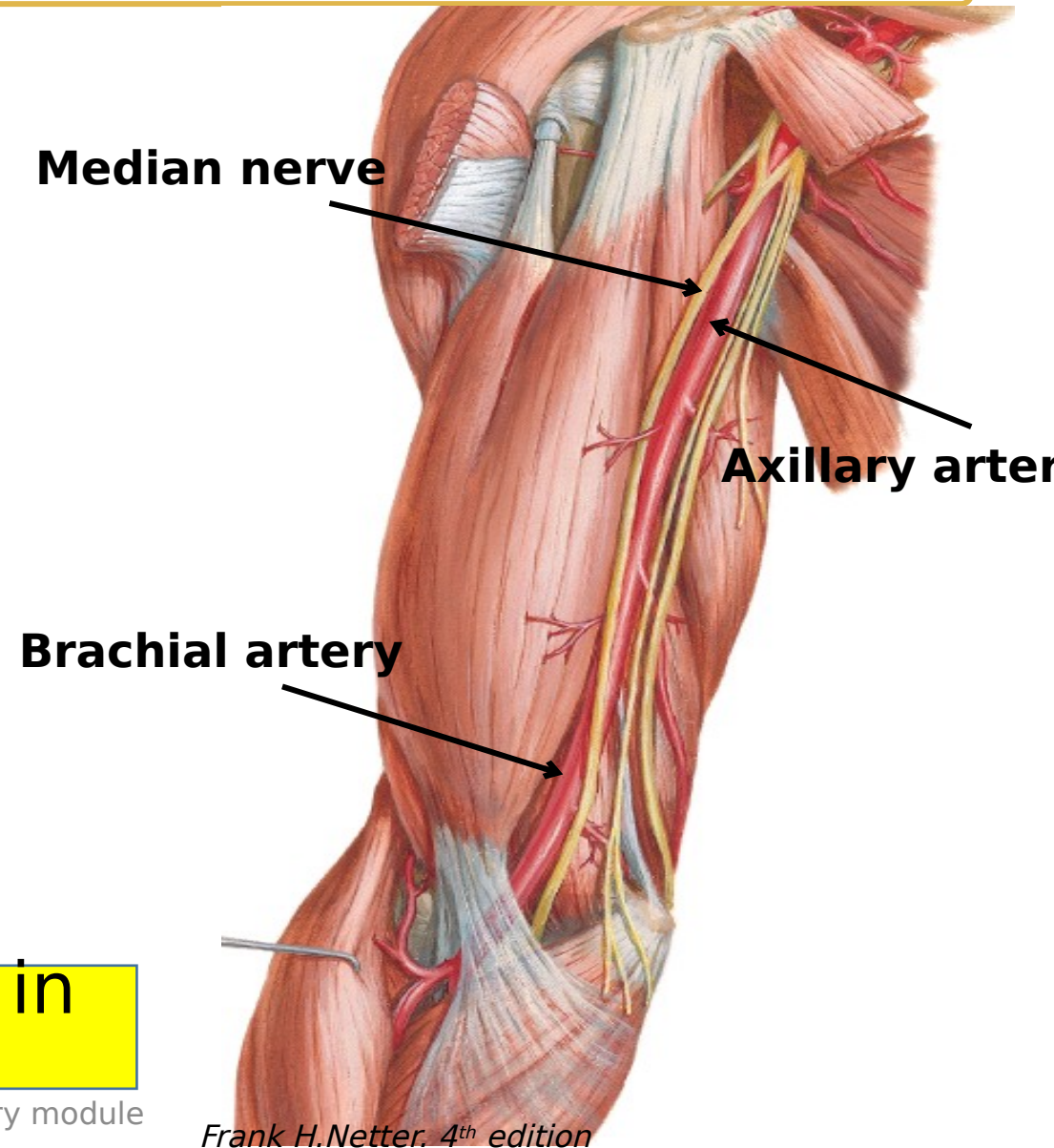
Nerves of Front of Arm

Median Nerve

- **Root value :** ventral rami C5, 6, 7,8 & T1
- Arises by two roots : lateral root from lateral cord & medial root from medial cord.
- **Triple** relation to brachial artery first lateral then crosses in front at level of insertion of coracobrachialis to descend on medial side
- Enters forearm between 2 h of **pronator teres**

No branches in arm

Musculoskeletal & integumentary module



Frank H. Netter, 4th edition

Nerves of Front of Arm

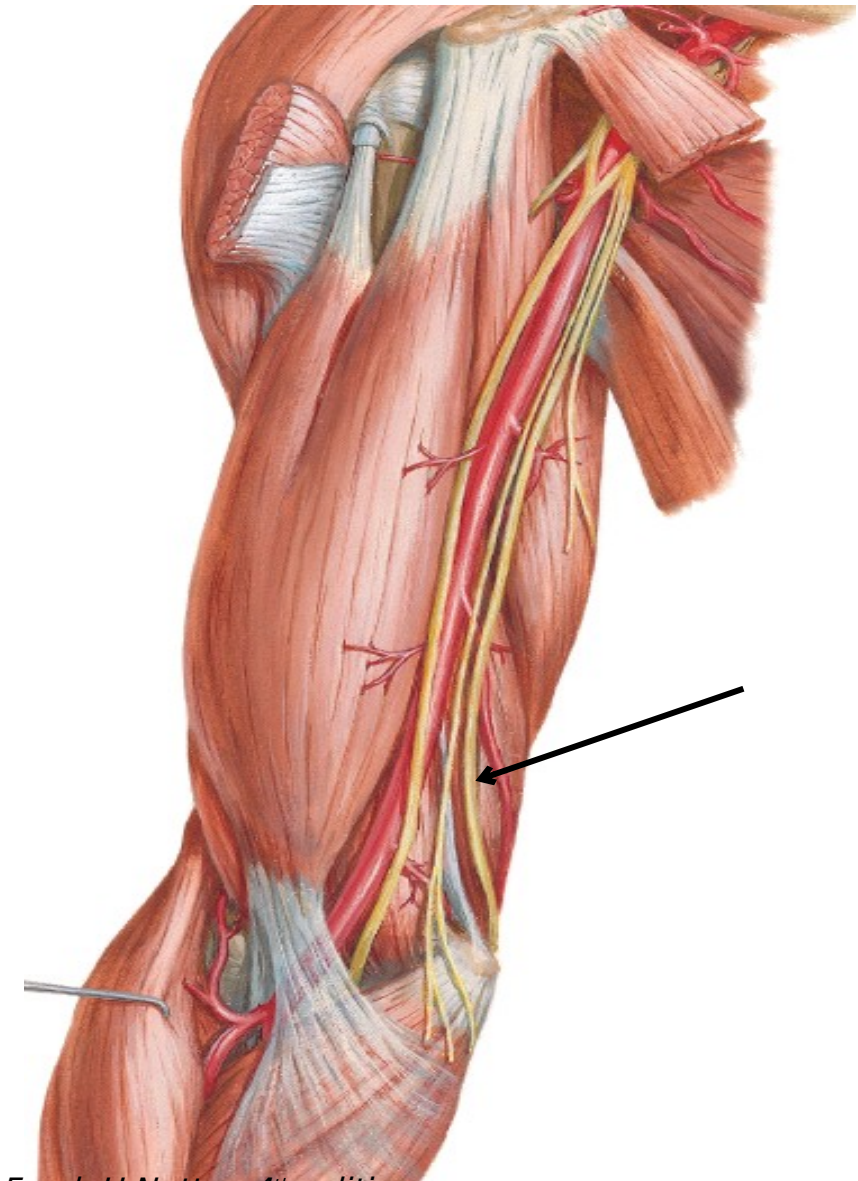


Ulnar Nerve

- **Root value :** ventral rami of C7,8 & T1 (medial cord)
- It descends on medial side of third part of axillary artery between it & vein
- On **medial side** of brachial artery down to middle of arm
- Pierces **medial intermuscular septa** to reach posterior compartment
- Passes **behind medial epicondyle**

No branches in the arm

Musculoskeletal & integumentary module



Frank H. Netter. 4th edition

Quiz (Muscles & nerves of front of arm)



Which one of the following muscles is the principal flexor of the elbow joint ?

- a) Biceps brachii
- b) Triceps
- c) Brachialis
- d) Coracobrachialis
- e) Trapezius

Which one of the following nerves supplies muscles of front of arm ?

- a) Ulnar
- b) Median
- c) Musculocutaneous
- d) Axillary
- e) Radial

Quiz (Muscles & nerves of front of arm)



Which one of the following nerves may be injured in fracture of the medial epicondyle?

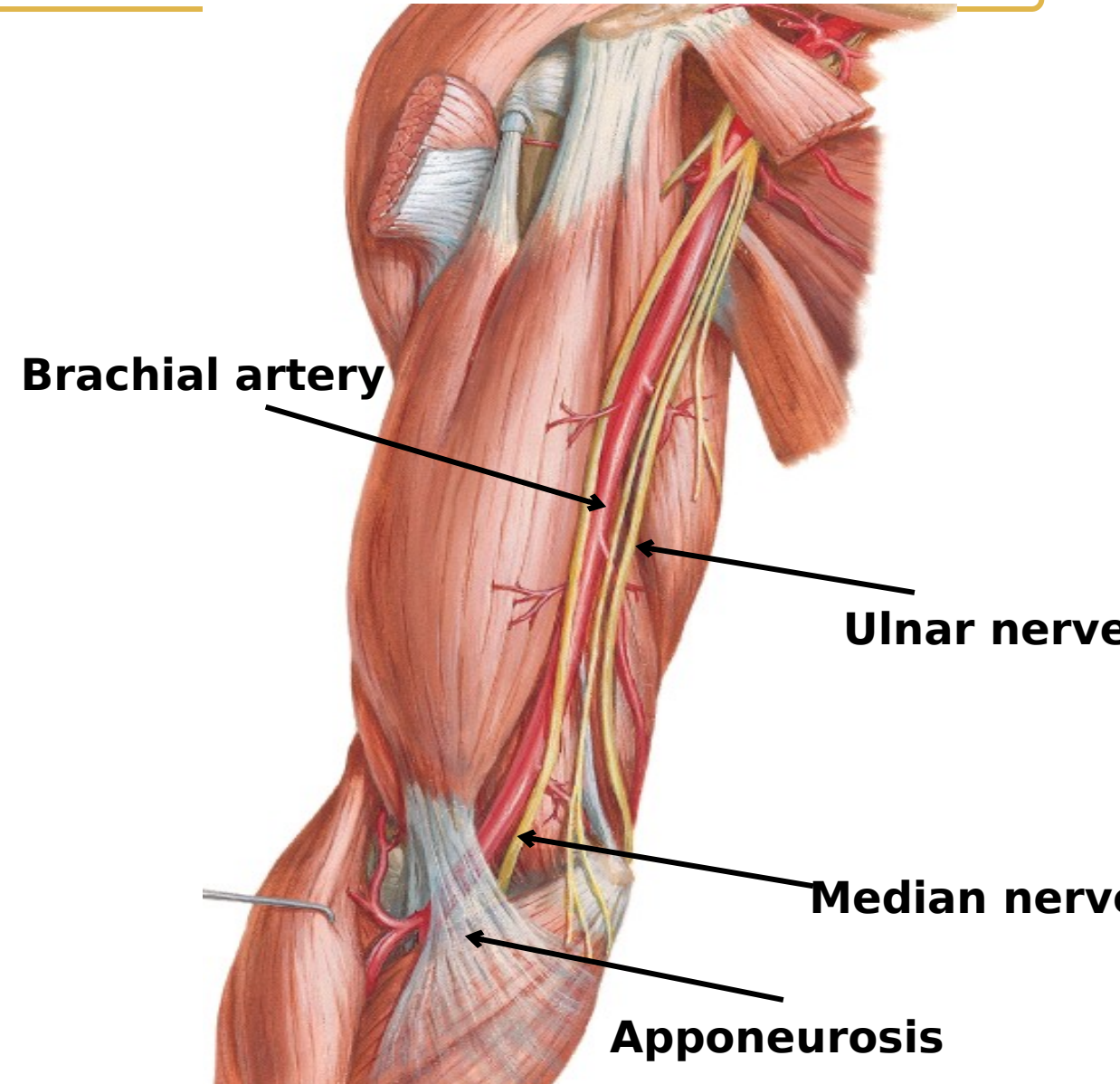
- a) Median
- b) Ulnar
- c) Musclocutaneous
- d) Axillary
- e) Radial

Artery of Front of Arm



Brachial Artery

- It is continuation of axillary at lower border of **teres major**
- Ends at level of **neck of radius** by dividing into radial & ulnar arteries
- Accompanied by **2 vena comitantes**
- At first it lies medial to humerus then in front
- At elbow it is covered by **bicipital aponeurosis**.



Branches of brachial artery



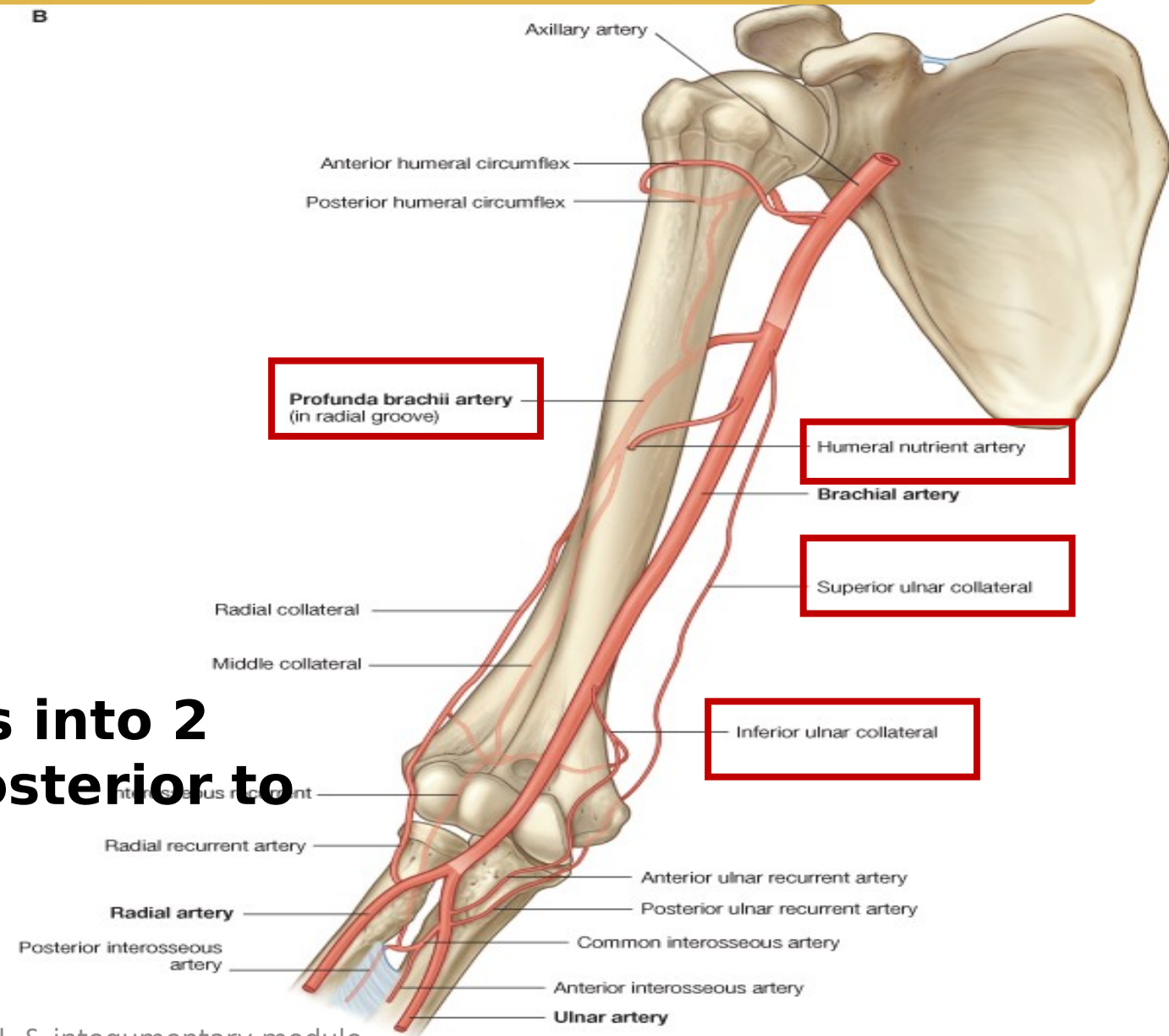
Muscular

Nutrient to humerus

Superior ulnar collateral:
Arises at middle of arm, passes to
back of medial epicondyle

Inferior ulnar collateral:
Arises 2 inches above elbow divides into 2
branches That passes anterior & posterior to
medial epicondyle

Profunda brachii



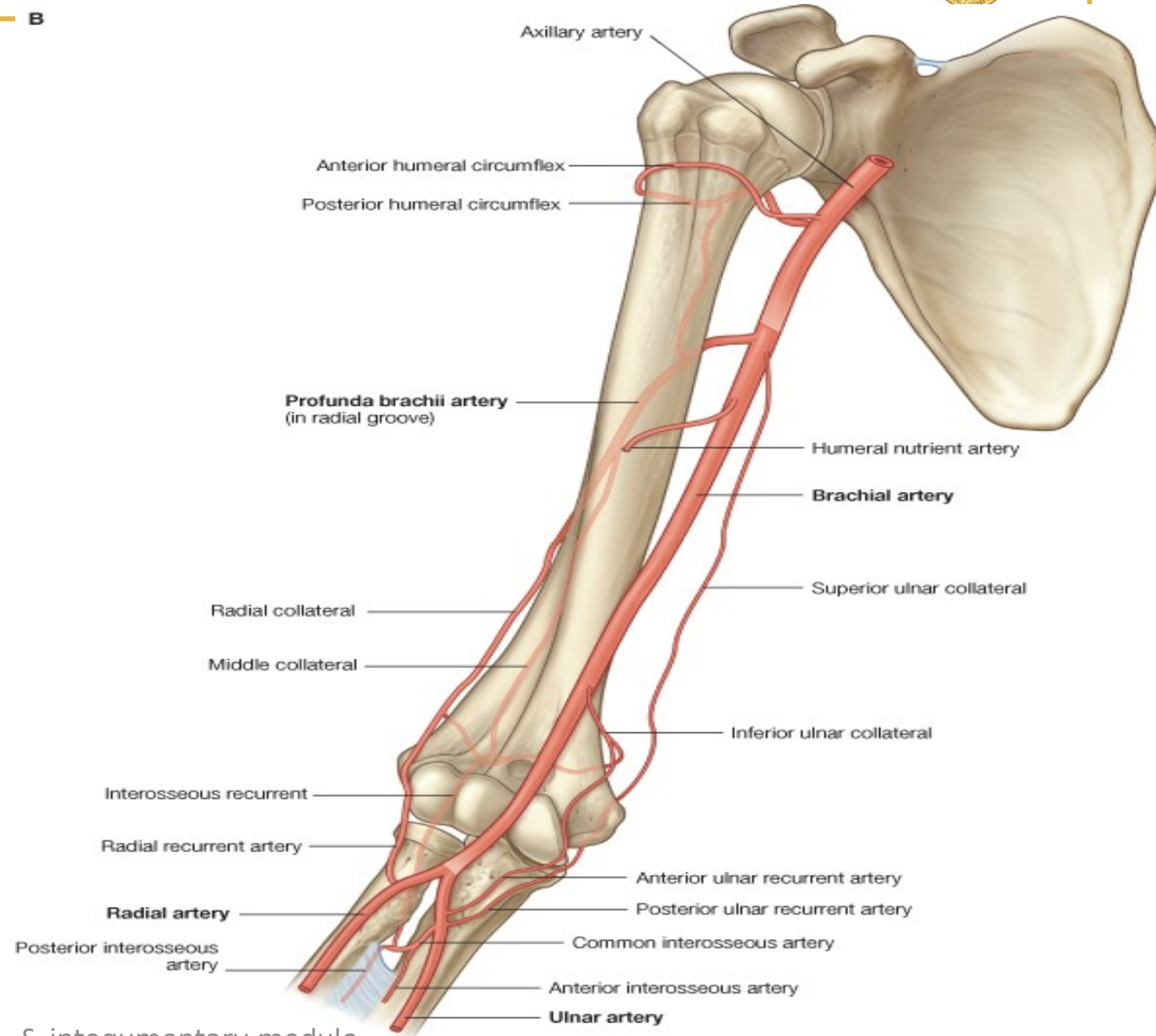
Profunda brachii



- Arise from posteromedial side of brachial
- Runs with radial nerve between long & medial heads of triceps to reaches spiral groove

Branches :

- 1- **Muscular** to triceps
- 2- **Ascending branch** : anastomose with descending of posterior circumflex
- 3- **Nutrient** to humerus
- 4- **radial collateral** to front of lateral epicondyle
- 5- **Middle collateral** to back of lateral epicondyle



Quiz (Brachial artery)



Which one of the following arteries passes posterior to the lateral epicondyle?

- a) Radial collateral
- b) Middle collateral
- c) Superior ulnar collateral
- d) Inferior ulnar collateral
- e) Profunda brachii

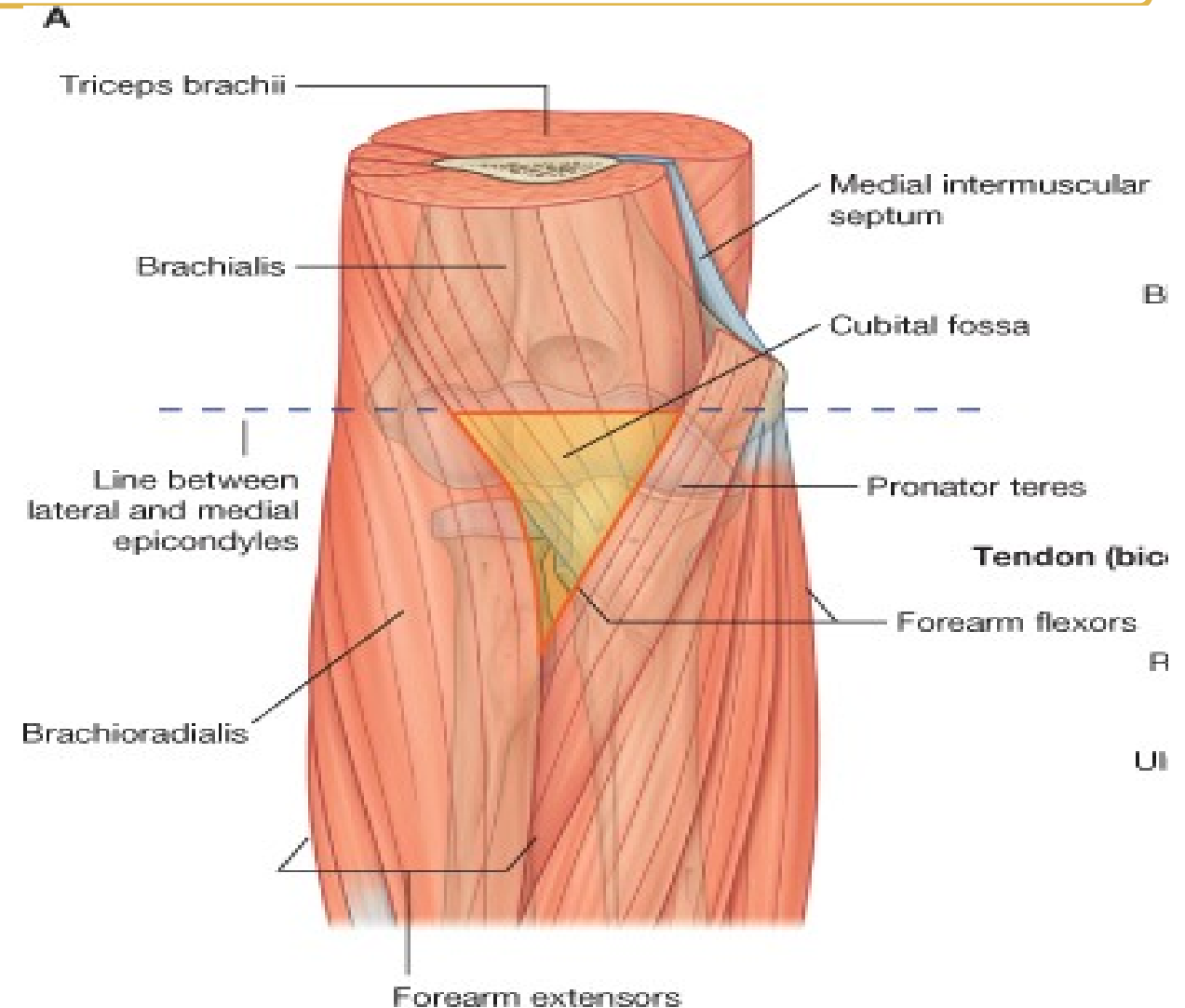
Boundaries of Cubital Fossa



Triangular intermuscular space in-front of elbow

Boundaries:

- **Medial**: lateral border of pronator teres
- **Lateral**: medial border of brachioradialis
- **Base** : imaginary line between 2 epicondyles
- **Apex**: overlap between pronator teres & brachioradialis



Boundaries of Cubital Fossa



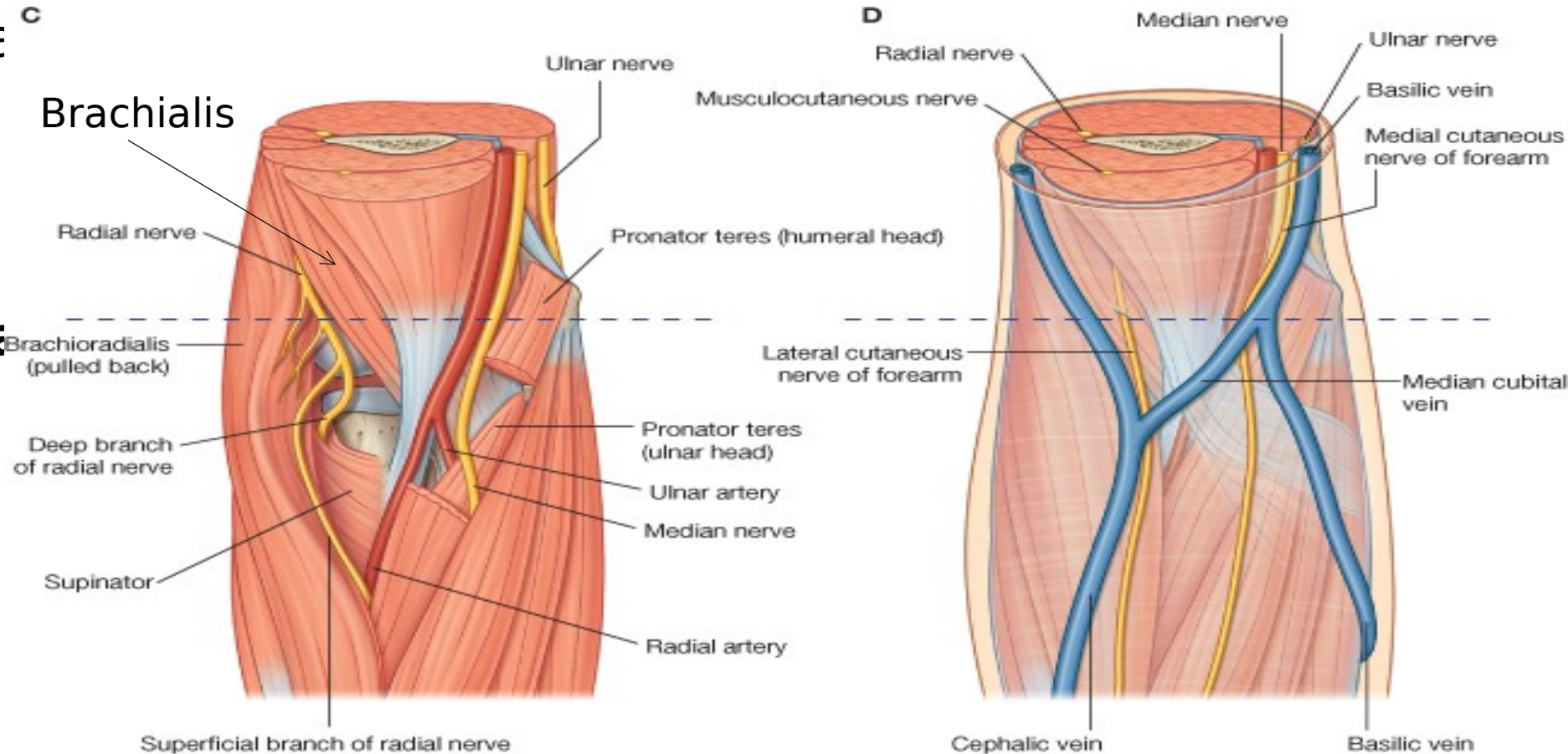
- **Floor:** lateral **supinator** & medial **brachialis**.

- **Roof :**

1-Skin

2-Superficial fascia containing cephalic vein; basilic vein & median cubital vein

3-Deep fascia & bicipital aponeurosis



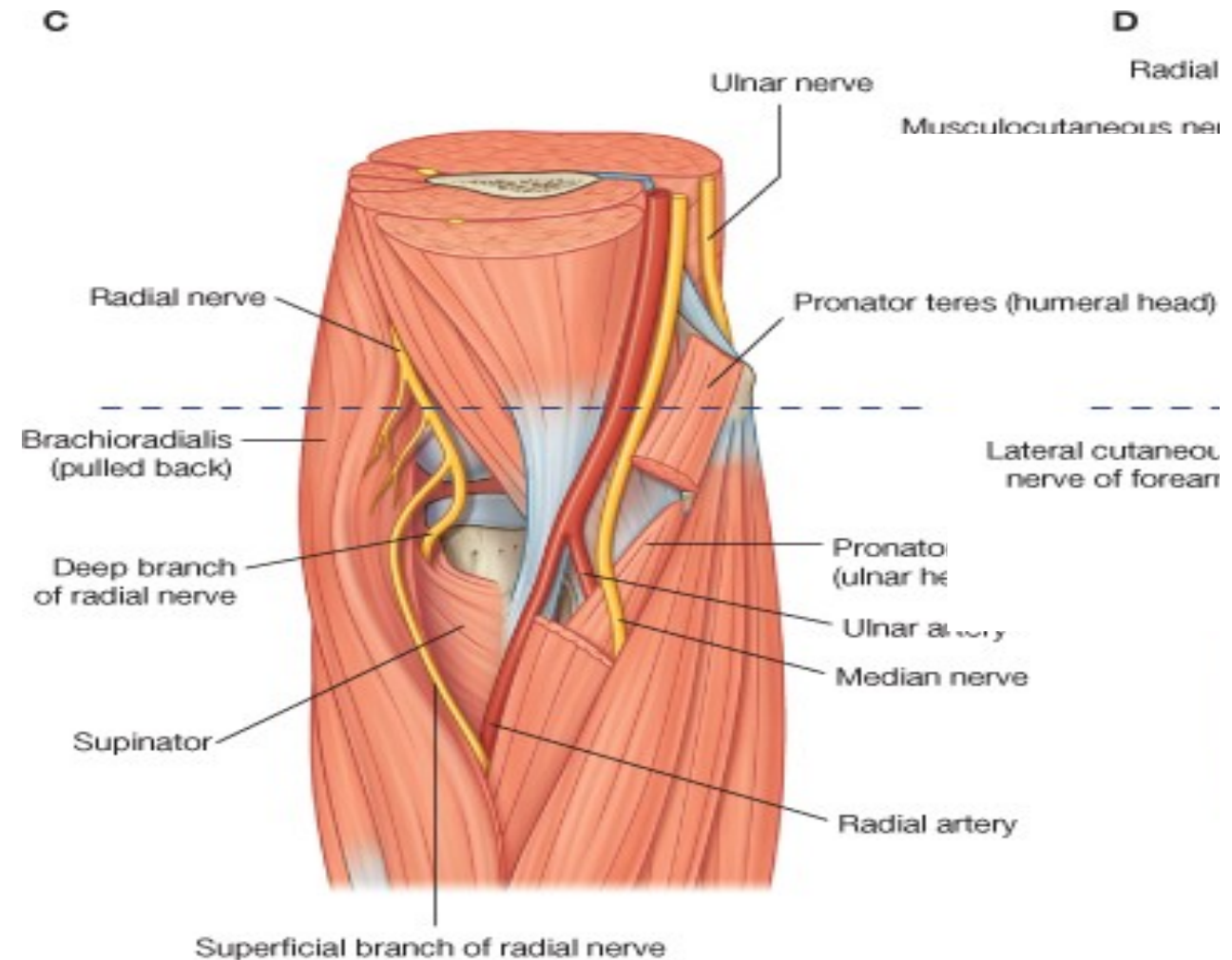
© Elsevier. Drake et al: Gray's Anatomy for Students - www.studentconsult.com

Musculoskeletal & integumentary module

Contents of Cubital Fossa



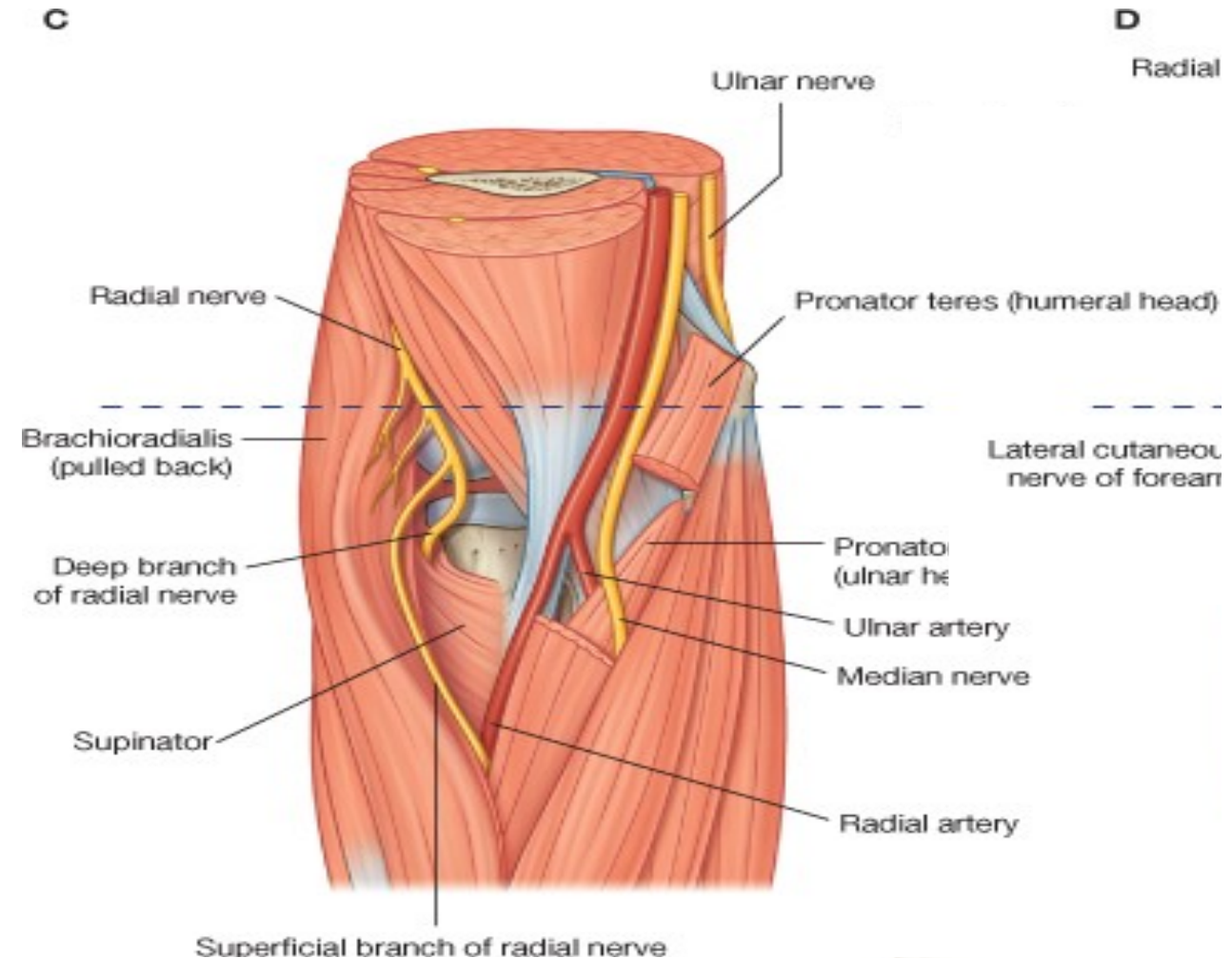
- **Brachial artery** : lies in middle of fossa, divides into
 - 1-ulnar artery** leaves fossa by passing deep to pronator teres
 - 2- radial artery** leaves fossa at its apex under brachioradialis



Contents of Cubital Fossa



- **Median nerve** : on medial side of artery leaves fossa By passing between **2 heads of pronator teres**.
- **Tendon of biceps** : on lateral side of brachial artery
- **Radial nerve** : lateral between brachialis & brachioradialis





//www.google.com/search?
q=measuring+blood+pressure&source=Inms&tbm=isch&sa=X&ved=0ahUKEwjurtfvpafhAhVGJhoKHdRzDacQ_AUIDygC&biw=1366&bih=657#imgcr=xuAlru9CaNB13M:

The main artery used in measurement of blood pressure is the brachial artery



://www.google.com/search?
q=intravenous+injection&source=Inms&tbm=isch&sa=X&ved=0ahUKEwjvy5nKpqfhAhWEx4UKHbgqBR4Q_AUIDigB&cshid=1553860860331955&biw=1366&bih=657#imgcr=t0KnLpJEAN-D9M:

One of the main veins used in intravenous injections is the median cubital vein

It is separated from the brachial artery by bicipital aponeurosis

Quiz (Cubital fossa)



During taking a blood sample from the median cubital vein. Which one of the following structures protects the brachial artery from being injured?

- a) Brachialis
- b) Biceps tendon
- c) Bicipital aponeurosis
- d) Radial nerve
- e) Median nerve

Back of arm



Triceps :

Origin :

Long head : infra glenoid tubercle

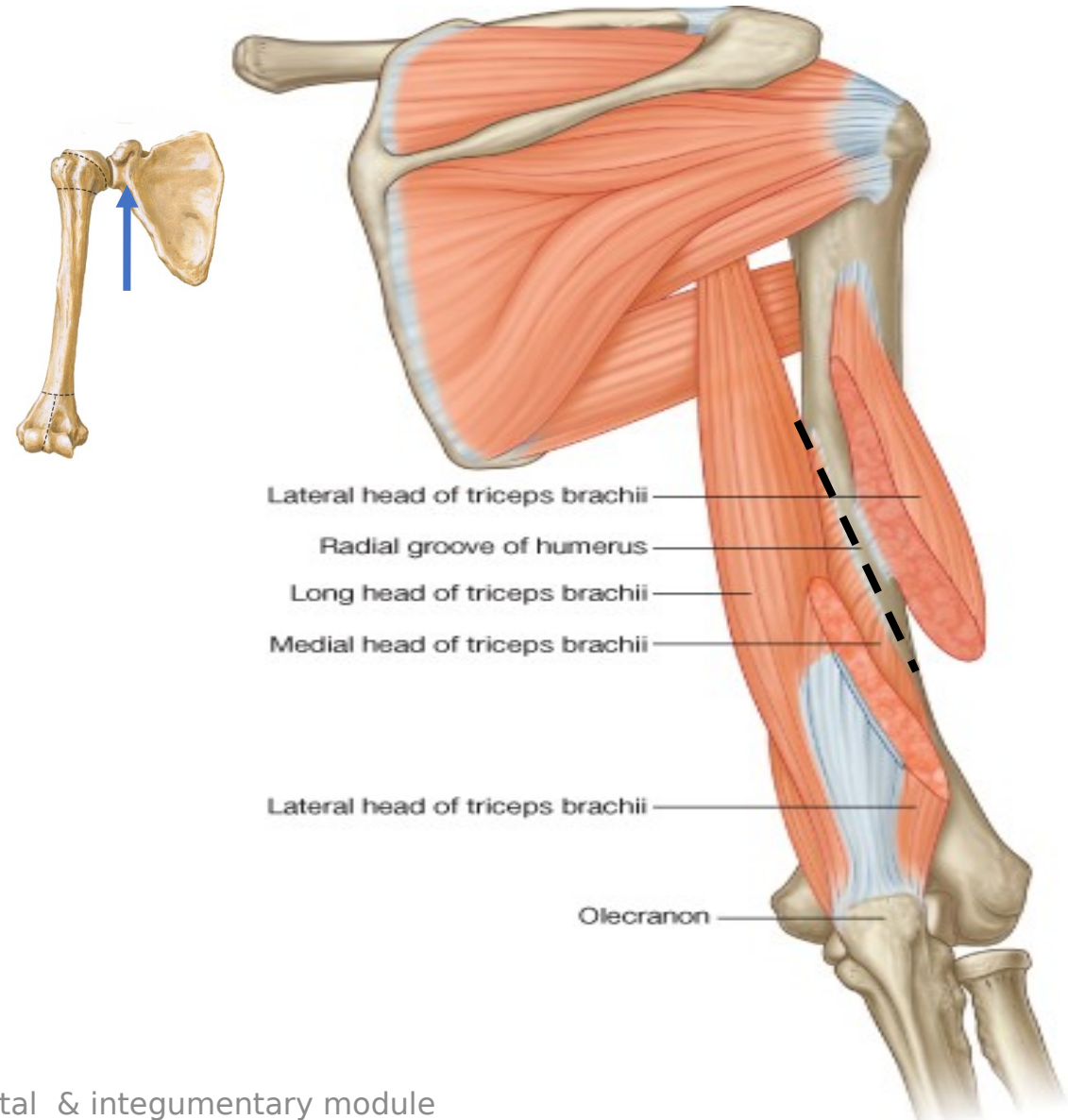
Lateral head : upper part of posterior surface of humerus

Medial head: posterior surface of humerus below spiral groove

Insertion : posterior part of upper surface of olecranon process of ulna

Nerve supply : radial nerve

NB; few fibers from medial head of triceps form articularis Cubiti & inserted in capsule of elbow

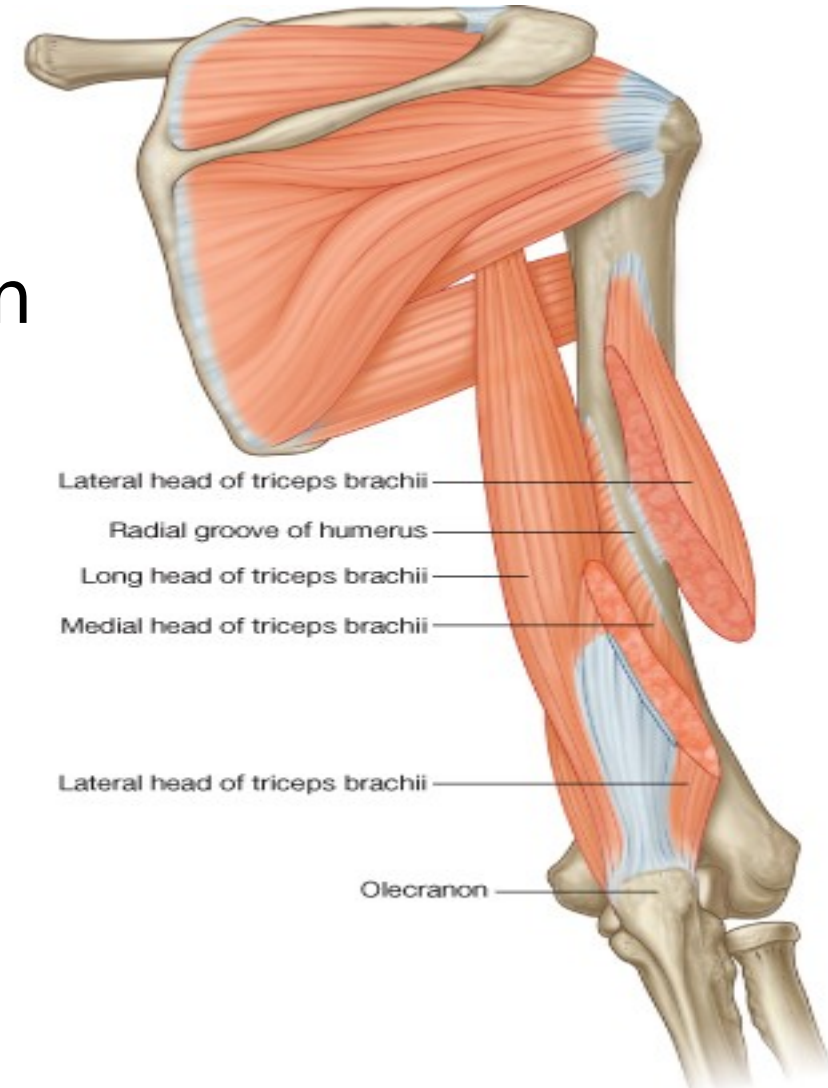


Back of arm



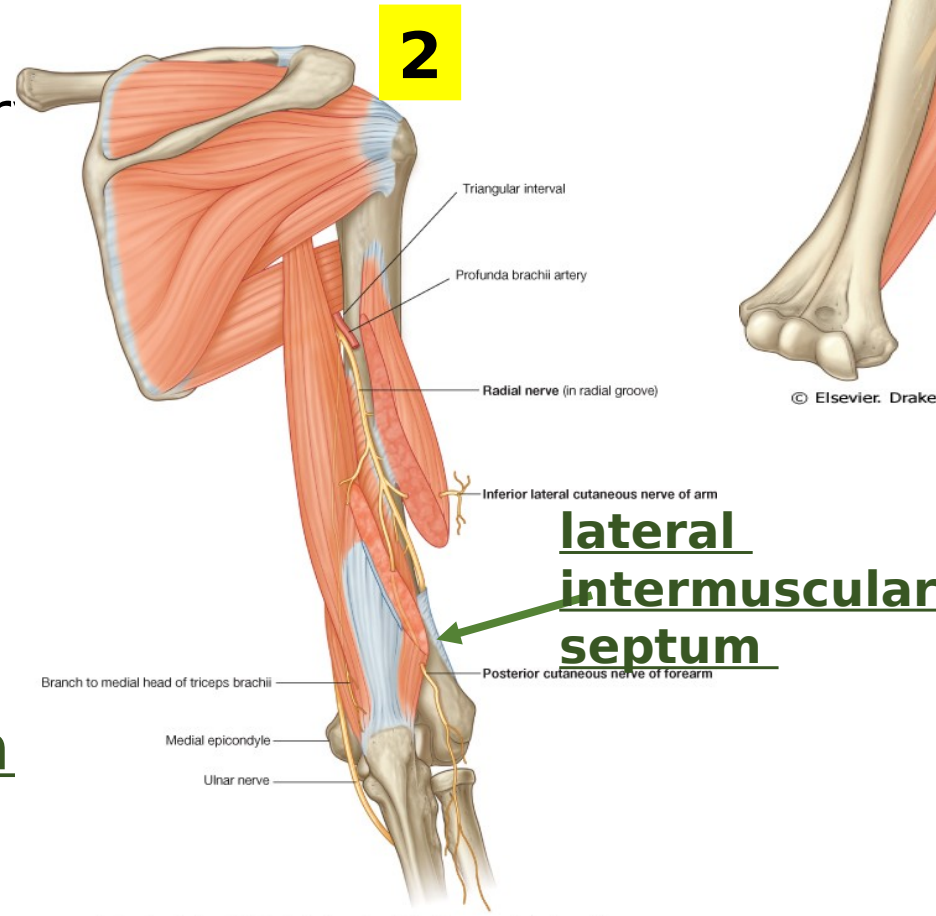
Action of triceps

- 1- Main extensor of elbow
- 2- Long head help in Adduction of arm
- 3- Long head support shoulder
- 4- Articularis cubiti: pulls Capsule of elbow posterior During extension

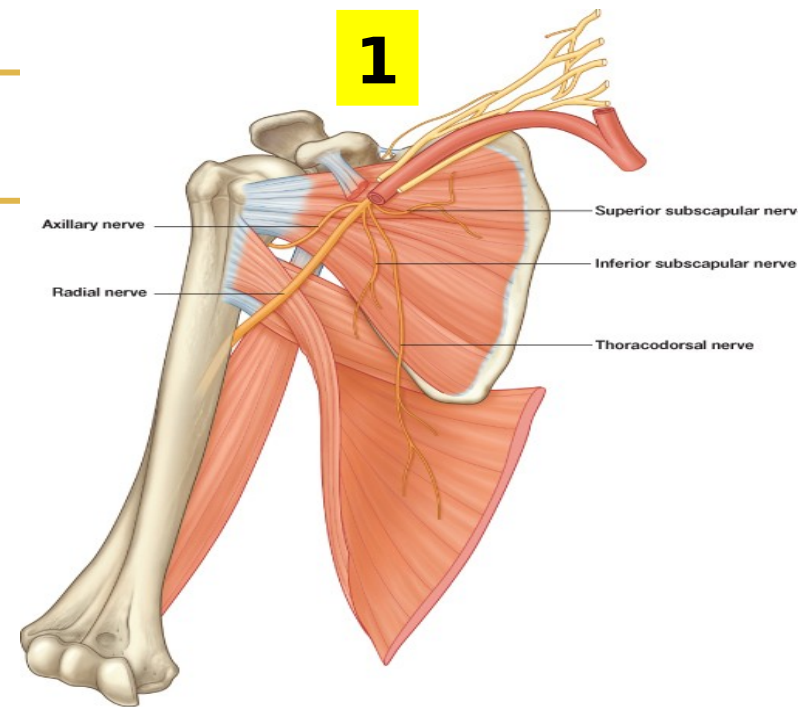


Radial Nerve

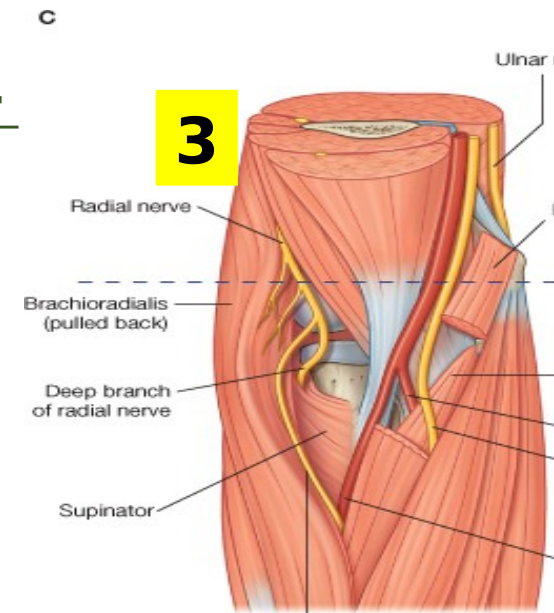
- **Root value:** Ventral rami of C5,6,7,8 T1 from posterior cord
- 1- Lies behind 3rd part of axillary artery
- 2- Passes **between long and medial heads of triceps** with profunda (in lower triangular)
- Passes in **spiral groove** covered by lateral head of triceps
- Pierces **lateral intermuscular septum** to reach anterior compartment
- 3- Passes between **brachialis** and **brachioradialis**



© Elsevier. Drake et al: Gray's Anatomy for Students - www.studentconsult.com



© Elsevier. Drake et al: Gray's Anatomy for Students - www.studentconsult.com



Radial nerve



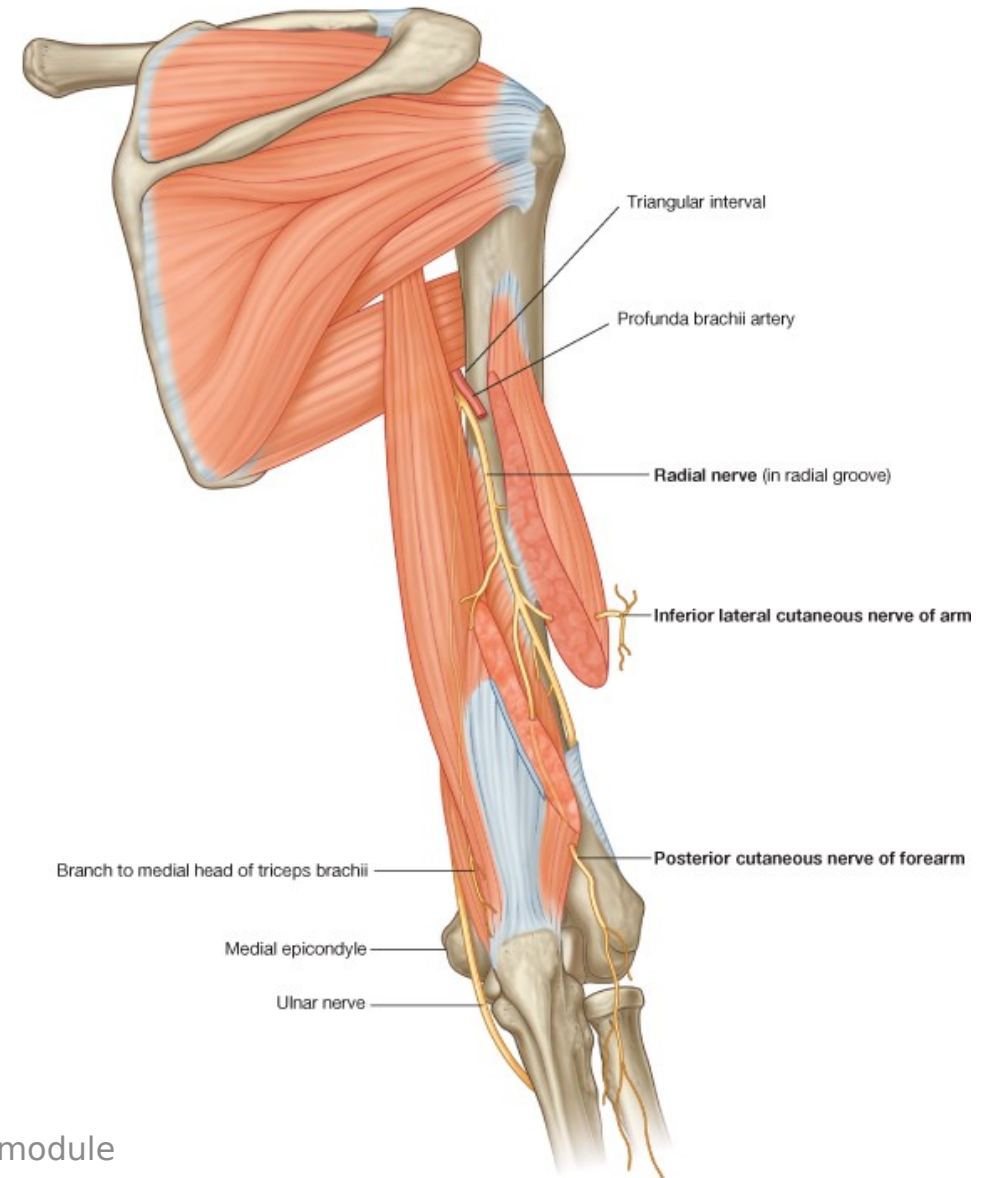
Branches of radial nerve

• In axilla

- 1- **long** head of **triceps**
- 2- **Medial** head of **triceps**
- 3- posterior cutaneous nerve of arm

• Branches in spiral groove

- 1- **lateral** head of **triceps**
- 2- **Medial** head of **triceps**
- 3- nerve to **anconeus**
- 4- lower lateral cutaneous nerve of arm
- 5- posterior cutaneous nerve of forearm



Radial nerve

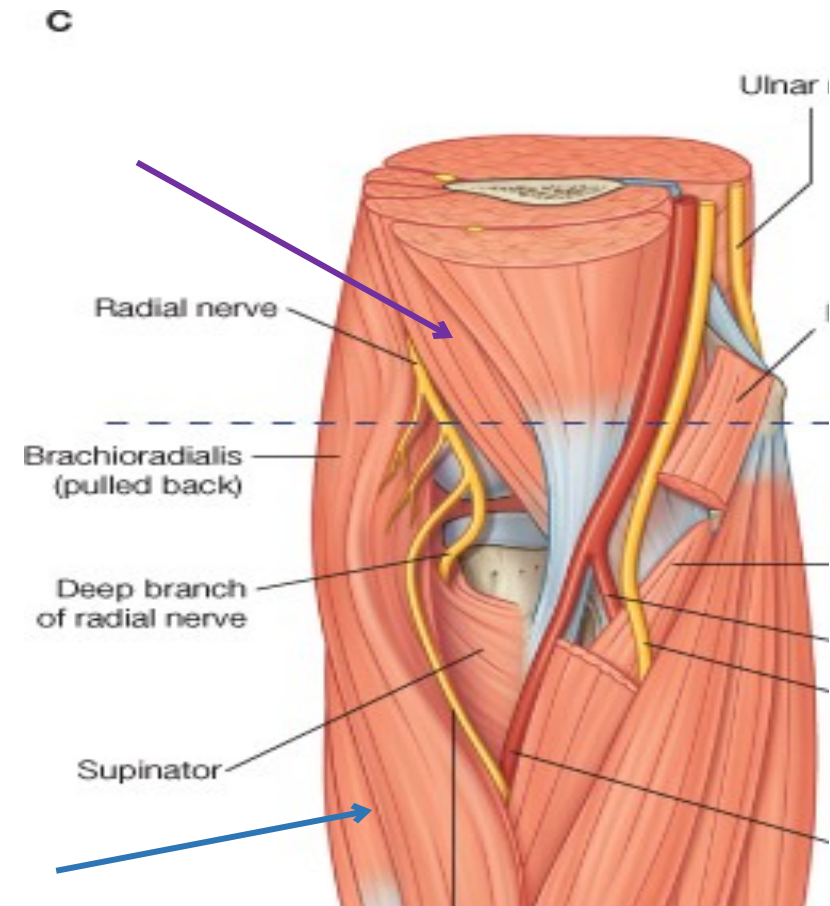


Runs in groove between brachialis & brachioradialis

lateral part of **brachialis**

brachioradialis

extensor carpi radialis longus



© Elsevier. Drake et al: Gray's Anatomy for Students - www.studentconsult.com

Quiz (Muscles & nerves of back of arm)



Fracture of **mid-shaft of the humerus** can affect which one of the following nerves?

- a) Ulnar
- b) Median
- c) Radial
- d) Musclocutaneous
- e) Axillary

Summary



1. Muscles of the arm, attachments, action & nerve supply.
2. Musculocutaneous, ulnar, median and radial nerves course and branches in the arm.
3. Brachial artery beginning, termination, course and main branches.
4. Boundaries , roof , floor and contents of cubital fossa

SUGGESTED TEXTBOOKS



1. Clinical Anatomy by regions, Richard Snell 9th edition
from page 370 to 378
2. Frank H. Netter Atlas of Human Anatomy, 4th edition
from plate 431 to 434.



Thank You